

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Wayne Barnhart <wayneb@on-ramp.ior.com>
Subject: [519] 18AVQ
Message-ID: <Pine.LNX.3.93.960706120635.28060A-100000@on-ramp.ior.com>

Thanks for the response guys - I'll give it a try.

73's

Wayne WB7WHI
Spokane, Wa.

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: wa5whn@ix.netcom.com (Jay Miller)
Subject: [499] 30 Meters DX list
Message-ID: <199607060409.VAA28969@dfw-ix7.ix.netcom.com>

Dear QRP Compadres,
You may wish to check out the following URL;

<http://www.clinet.fi/~jukka/10.html>

That will provide You with the up to date data on what DX has been worked/heard on 30 meters (Hint: there is a list for each band, click the icon at the bottom screen, which will take You back to the **Home** page.)

I had even received a 599 from XM3/KU0J on 6, July, '96, @ 0253 UTC, on 10.107 MHz. Evidently, quite a few QRPers are receiving 599's from XM3/KU0J. But, I get more of a kick out of working AA3MD-Craig, N9DD-Dave, et al from the QRP-L, on HF.

72...Jay, WA5WHN, Albuquerque, NM (3 watts)

PS Sept. 21, 1996 is approaching; do You have Your' site selected for the upcoming New England QRP Club's "QRP AField" ? Remember, in Your' exchanges, during the "QRP AField" event, add "er" to every noun, that ends in "a". "data" becomes "dater", "Antenna" becomes "antenner", "Alabama" becomes "Bamer" ;-) We will be following the suggested theme for "QRP AField", well almost :-)) (Lighthouses).

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: PDouglas12@aol.com
Subject: [527] Any Qrpers in Hawaii?
Message-ID: <960706215024_350841857@emout19.mail.aol.com>

We'll be in Hawaii July 12th. Any Qrpers on Mawaii or Kawaii? (Please forgive spelling)

Preston WJ2V

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Marshall Emm <75230.1405@CompuServe.COM>
Subject: [511] CMOS III and PIC Projects
Message-ID: <960706161146_75230.1405_HHB28-1@CompuServe.COM>

Hi, all--

Chuck raises an interesting point or two about projects based on programmed PIC chips or other devices where you gotta buy the chip.

The Super CMOS III is indeed a fine keyer (anyone who wants to can read my review of it in the July issue of 73) and certainly more keyer than you will find anywhere else for that sort of money. My objection to the article in QST (August '95) was that it was presented as a "weekend project" when in fact you could not build it from the article. That one, specific, article did resemble a press release or promotional article more than anything else.

The two letters Chuck mentioned are well-reasoned and make sense, up to a point. That point, in my opinion, is the differentiation between business and hobby. The guys who develop software for programmable devices, and want to make some money on them, have every right to do so. And it is probably fair to say also that we benefit from the availability of kits, programmed chips, etc, that might not see the light of day otherwise.

Software is my own line of work, so I am very supportive of efforts to protect intellectual property. I'm sure I'm not the only one who took offense at QST's suggestion (in the Dr. is In) that a prospective Morse student should use a VCR to copy someone else's Morse tapes!

But let's face it, there is probably no less work in designing a project (and construction article) that does NOT rely on a proprietary program, and thousands of such projects have been donated to the amateur community via the Handbook and

magazine articles over the years. Thousands of ham-related computer programs are in the public domain or distributed as "freeware" and "shareware."

In my opinion, there IS a clear distinction between projects that are given away and those that are offered for sale, and magazine editors with any integrity should observe that distinction.

72
Marshall
AA0XI/VK5FN

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: bcutter@teal.csn.net (Bob Cutter)
Subject: [524] Filling holes
Message-ID: <199607062327.RAA27508@lynx.csn.net>

I have several Hammond cast aluminum boxes that I can use in projects, however they have holes in them.

Anyone have an easy way to fill these for painting?

72, Bob KI0G
QBF? ZUE

Bob Cutter,Glenwood Springs, CO

KI0G

bcutter@teal.csn.net

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Lynn Geitgey <lgeitgey@kumc.edu>
Subject: [523] FS: HW-8 pkg
Message-ID: <s1de8eb4.038@gw.kumc.edu>

Time to clean out the shack, so...

HW-8 has been modified (all mod sheets included)	\$125.00	
HM-9 QRP Watt Meter		\$ 50.00
HFT-9 Antenna Tuner		\$ 50.00
PSA-9 Power Supply		\$ 25.00
HW-8 Handbook		\$

10.00

If you take it ALL (\$225.00 package price), I'll pay the shipping to any of the lower 48.

72 de KB0LRB - Lynn
lgeitgey@kumc.edu
NorCal #399, QRP-L 103

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: pcw12@ix.netcom.com (Phil Wheeler)
Subject: [529] Hy-Gain 19PD Portable Dipole
Message-ID: <199607070224.TAA05632@dfw-ix6.ix.netcom.com>

Today I was cruising the aisles in one of the local money sinks (aka ham radio stores). I came across a sales bulletin for a Hy-gain 19PD Portable Dipole (Order No. 381S). I should note that the people running the store (Jun's) new nothing about it. Here is, as best I can type it, the text of the bulletin:

The 19PD is an ultra-light dipole antenna that operates anywhere in the 10-80 meter bands. The elements are fabricated from braided nylon wire rope; The conductors are woven into the rope. The UHF input connector and the connections to the elements are enclosed in an ABS center insulator. A flat storage bobbin for each element is an essential part of the antenna. During operation the unused portion of each element is shorted out and remains on the storage bobbin. The antenna is supported at each end by 100 foot lengths of rope which can be tied to trees, buildings, poles, etc. to elevate the antenna above the ground. A weight is attached to each end of the support rope for throwing the rope over the overhead supports.....

Tech info: 402/465-7087
Orders : 402/465-7038

No info re price, availability, weight, etc.

Does anyone know anything about this antenna? Sounds sorta QRP-focused (or at least portable-focused).

Phil W7UOX

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: Rick Zabrodski <zabrodsk@med.ucalgary.ca>
Subject: [518] Is Ham Radio Hazardous to Your Health?
Message-ID: <Pine.SUN.3.94.960706114506.12748B-100000@ume>

For those of you who missed my talk at FIDM 96, my article about EMF, ham radio and your health, it is now available:

My article is now linked with my Home Page

<http://www.ucalgary.ca/~rzabrods>

the article itself is at : <http://www.ucalgary.ca/~rzabrods/rac94.html>

You can download it and use it directly or link to it,
either is ok with me.

Note, my home page is underconstruction, I will link to QRP-L etc
shortly!

Dr. Rick Zabrodski BSc, MD, CCFP(E) MRO * VE6GK
Clinical Assistant Professor * NorCal 519 ARCI 7650 GQRP 8329
Faculty of Medicine, Univ. of Calgary * "Power is no substitute for skill"

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: wb2vuo@juno.com (William K Hibbert)
Subject: [528] Masts, Masts, Masts
Message-ID: <19960706.215226.11847.0.wb2vuo@juno.com>

Over the last 30+ years, I have used a number of masts. Some surplus (the best ones!!), some homebrew and some for the TV shop. I have read the discussions on the use of PVC, and re-posted an article about my brother's PVC mast. This subject can be discussed forever, I think, because, what works best is subject to a personal evaluation by the ultimate end-user...

Right now, here in the Depths of the Great Bergen Swamp, I have 3 types of masting in use. My 80/40 Meter Inverted Vees are held up with a Classic "A"-Frame, right out of the 1947 "ARRL Handbook". The 160/30 Meter Inverted Vees, and the 10 Meter G.P. are in place with chain-link fence top-rail "Spaghetti-Mast", which, after the first winter (60+ Knot winds are common in the winter...) took on multiple curves in the 40' height. The last is a 40' Rohn TV-type push-up mast, 1971 vintage. All

are guyed, and the wooden "A"-Frame has shown the best signs of surviving the elements.

I duplicated the "A"-Frame, and installed one down the road for Lou, KA2DQA, and 20 years ago, made one for the Tri-City Amateur Radio Club in New London, CT...

[KA1BB or whomever down there...Are you guys/gals still using the "A"-Frame???] If you have the time, and ambition, the wooden masts are the best, and most cost-effective, BUT...

1- Stay away from pressure-treated wood. It splits under the flexing and variable load.

2- Get a GOOD grade of primer and paint, and figure on 3 - 4 days to paint everything adequately. The paint & primer HAS to dry between coats thoroughly.

3- Use a good-quality of hardware, NOT cad-plated steel.

4- Preplan the mast. Make a sketch of the area, to scale, if possible. Don't get the mast half-installed and then discover that the guys will hit a tree/building/property line, etc...

5- Get enough people to install it properly and safely. If you drop a 75+ pound mast on your head, the hard-hat WON'T help...[You DO wear a hard-hat when working on masts and towers, don't you???]

Have fun, and don't be timid. Get that antler UP IN THE AIR!!!

72/73, Keith, WB2VUO

wb2vuo@juno.com

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: Steve Miller <kg7pv@teleport.com>

Subject: [500] my *new* pwr/swr meter

Message-ID: <1.5.4.32.19960706041814.00663d00@mail.teleport.com>

>No need to hurry this too much... I'm having too much fun!! arrrrr!

> Next time you see one those old "CB" meters at the flea mkt give

>a few bucks and have some fun modifying one. 10-4?

>

>73, Randy WJ4P

>

Hi Randy, earlier this year I "rewired" a Sears Robuck CB ant match box. It is only a little bigger than 3 x 2 x 2! Had two panel mount compression

caps and pl259's so I tore out the rest of the guts and added 3 inductors on switches so I now have a standard "tee" tuner circuit and can chose between the 3 inductors (in any combo of 2, 4, 8 uH to cover an inductor range of 0 - 14 in even numbers). Only handles qrp levels but for a couple of buck and a trip to the junk box - what fun. Anyone guess where I got the idea for the switched inductors?? 73

Steve Miller (CN-85) Norcal #308 QRP-L #109 (packet kg7pv@k7iqi.or.usa.noam)

Oak Hills Spirit II, ant is 40 mtr dipole fed w/ladder line @ 45 feet

-

KG7PV TMPS 1996 Qs=19 States=11 Confirmed=0 Dx=02

AK CA CO KS NC NE NM PA TX JW OZ WV UT

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: jeffa@ix.netcom.com (Jeff Anderson)

Subject: [520] Need 2N407 PNP

Message-ID: <199607061959.MAA24196@dfw-ix7.ix.netcom.com>

I'm fixing an old Heath Mohican receiver and need a 2N407 transistor. It's a germanium PNP. Any ideas where I can find one?

Thanks,

- Jeff, WA6AHL

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: Richard Wilkerson <richqrp@worldnet.att.net>

Subject: [512] new address

Message-ID: <31DE30D9.7A0@worldnet.att.net>

To Roy Gergson..Roy just changed my address..richqrp@worldnet.att.net
Still having a ball with your 8020 rig...72's rich wd6fdd.

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: Mike Boice <kd0fx@worldnet.att.net>

Subject: [503] new email address

Message-ID: <1.5.4.32.19960706055311.00686c3c@postoffice.worldnet.att.net>

To any and all interested, I have a new email address.

Old: MBoice@ix.netcom.com

New: kd0fx@worldnet.att.net

I'm the guy who keeps asking questions on Ramsey, Ten Tec & Gregson kits, and G5RV antennas.

Thanks to all

73,
mike KD0FX
Richland WA QRP-L #576

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Jeffrey Greer <KF4GKH@worldnet.att.net>
Subject: [535] NorCal Far Circuits Keyer
Message-ID: <199607070355.DAA27533@mailhost.worldnet.att.net>

I recently received the Curtis 8044ABM chip and circuit board from NorCal QRP club. While digging through the circuit to determine parts placement, I discovered a discrepancy with a similar circuit in the 1996 ARRL Handbook. The wiring of pin 8, iambic select does not agree. On the Far Circuits diagram, grounding the pin selects mode B. On the ARRL diagram, grounding the pin selects mode A. Does anyone know which is correct? I was planning to wire it permanently to B mode.

Thanks, Jeff WD4ETO

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: adams@chuck.dallas.sgi.com (chuck adams)
Subject: [522] NorTex Meeting & QQ & 72
Message-ID: <199607062008.UAA06149@chuck.dallas.sgi.com>

Gang,

Well, this month and also for the August meeting, the North Texas QRP Club met and will meet at Bodacious Bar-B-Que in Arlington TX. Meeting (well gathering is more like it) starts at 10a.m. and we left about 12:30 or so. Usually we meet at Silicon Graphics Tech Ed Center but since we just moved our

offices and there was some question as to my travel and some question as to things being ready..... We decided to hold off for this month. August is doings in Austin. Was going to be NorCal but AA on trip to Reno on Sunday didn't have a flight later that Phyllis could take and I wasn't going to leave her in the airport waiting on me for five hours. Not and live to tell about it. :-) It's confusing and I don't wanna bore the audience at hand. It's four different flights in three days.

For this month's meeting we had

N5TYD, N5KSJ, KC5RAS, W2LQ, N5OSG, K5JHP, AF7D, KK5NA, KK5QA, W5ISZ, K5JHS, K3ETS, W5W0, and K5F0.

Good showing and we got to eat at 11 instead of waiting until 12 to go to another place. I was starving (see info in later material).

After the meeting a group of us ran over (drove) to a store a couple of miles away. I bought the Communications Quarterly Spring 1996. There are two apropos articles for this group. The first is "Fractal and Shaped Dipoles" by Nathan "Chip" Cohen, N1IR. This article will take some time to digest, but there is an interesting wire beam called the Cohen beam named after the author. Interesting shape and an interesting gain pattern. We'll let LB explain later if he sees the article. I have to get out Elnec and see.

Rick Littleifeld, K1BQT, has an article apropos to SMT titled "Low-cost SMD prototype construction".
SMT - Surface Mount Technology
SMD - Surface Mount Device

Also picked up the July issue of 73 and saw Marshall's, AA0XI, review of the CMOS III Keyer. His note that Idiom Press had promised to include minimal construction notes has been completed. See his posting earlier today or late yesterday to this group.

The reason for the QQ and 72 in the title. Hope you enjoy this at my expense. :-)

I got up this morning at 6 a.m. and walked to the post office about a mile away. Temp 85 degrees already. I picked up 72 in the mail and I got my QQ which was mailed from publisher. Usually I walk for an hour and get back to the house. Well, I decided that I could walk and read at the same time. This is fairly simple 'cuz you can watch for the edge of the curb

and listen for oncoming traffic in both directions. No problem even for a clutz like me.

Well, I'm walking along reading all kinds of interesting stuff and being very careful. Then I note that I'm in a wooded section of Dallas that I haven't seen. I walk to the corner and I see two street names that I don't know. I know which way is north and south and east and west from the Boy Scout days. :-)

I am totally lost as to where I am, but I'm guessing that if I go south to the major street that I see about a half-mile away then I'll know where I am. Sure enough I find out. I'm about four miles or so further from the house that I thought I was. Total Trip: 2 hours 45 minutes. Total distance about 9+ miles.

Lesson: Boys and Girls - don't read QRP stuff and walk at the same time. You'll get too much exercise. :-) The stuff both in QQ and 72 is good. That's one of the reasons why I keep up my subs to every magazine and newsletter and club that I can. So much brain power in the press and so little time. Temperature when I got home was 95 degrees. Lost two pounds which is good and learned more stuff which is even better. I was lucky that I stuffed \$2 in the pocket so that I could pick up a diet-coke at the 7-11, otherwise I'd really been in trouble. :-) Still had time to get to the above meeting on time.

dit dit (let us tell you about the heat some day - will trade for wind)
--

Chuck Adams (K5FO CP-60) adams@sgi.com

K5FO TMPS 1996 Qs=048 States=25 Confirmed=11 DX=02 (0.95W)

AL AZ CA CO DC FL GA IA IL IN MD MI MO

NC OH OK OR RI SD TN TX UT WA WI WY

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: wb2vuo@juno.com (William K Hibbert)

Subject: [510] PPM: A Plastic Antenna Mast

Message-ID: <19960706.113422.11207.0.wb2vuo@juno.com>

Note: This was originally posted on packet in 1993, and was printed in the BARK (Brockport ARKlub) newsletter, and the Rochester VHF Group journal...

I am posting this due to the number of queries/requests for PVC/Mast projects that I have seen in the last couple of weeks...Keith, WB2VUO (in the Depths of the Great Bergen Swamp!!)

PPM: A Light-Duty PVC Pipe Mast

Over the 25+ years that I have been a ham. I have seen a few antenna supports, [and have built a few, myself]. One of my brothers, John, KB2SIL, has come up with a light-duty, inexpensive and easily built PVC Pipe Mast, PPM for short.

On John's first attempt on the PPM, he acquired (3) 10-foot lengths of 1 1/2" NPS PVC pipe. The actual outside diameter of this is 1.99", with a nominal ID of 1 1/2". He put the three lengths together with straight couplings and PVC cement. However, when he tried to raise the mast into the air, the cemented joints failed catastrophically, resulting in PVC hash and scraps all over the back yard. Something else needed to be done to improve the mast mechanically.

In PPM, Part II, John used a piece of the PVC for sleeves at each joint, cutting a pair of 2-foot lengths from some of the scrap, and splitting them lengthwise with a hacksaw. These split sleeves were held in place with four stainless steel hose clamps, two above, and two below the joint. This proved to be entirely adequate, and he set the mast up at the end of the house. Using a mast bracket, re-drilled for a larger U-bolt, and a set of light Nylon guys at the 20-foot level, he erected an 80 - 10 meter G5RV. This put the feedpoint up at 29-feet, just right for the 300-ohm twinlead, and the plastic mast doesn't affect the balance on the line!

As a bonus, and seeing that he didn't have his ticket back then, I checked out the antler for him. It plays as expected on not only 80 - 10 Meters, but also on 6 Meters. We were able to raise a 6-Meter repeater about 40 miles south of his QTH with around 3 watts. The SWR was normal for the HF ranges, being best on the 20 meter band, and was within the ATU's adjustment range on all the other HF bands.

John is in the Syracuse area, with a fairly well-sheltered back yard. Out here on the windswept flats [swamps] of Bergen, I wouldn't expect the PPM to survive, unless I guyed it 6-ways to Sunday, but I am eyeing the leeward end of my barn as a possibility. I would think that the PPM would work well in almost any urban/suburban lot, and being PVC, one wouldn't have to worry about corrosion and/or water damage.

If you try out John's PPM, drop me a line here on packet...
73, Keith, KE2DI [Now WB2VUO (again!)]

BTW: You can save bandwidth, and contact me, or John directly. My E-Mail
ADR is - wb2vuo@juno.com
John's is - johnh@mailbox.lpl.org
or - john_hibbert@lpl.org

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: kd7s@psnw.com (Bill Jones)
Subject: [516] PVC Pipe Antenna Masts
Message-ID: <199607061735.KAA18133@psnw.com>

The use of PVC pipe for antenna masts has intrigued me also. While I have yet to build one, several people have suggested the use of internal stiffeners consisting of 1" X 2" wood lath strips. Another idea might be to fill the entire mast with expandable foam. Regardless, I think anything over ten feet in length should be guyed. Safety first.

=====
Bill Jones - KD7S <><
Sanger, California
Reply to kd7s@psnw.com
=====

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: k3as@dol.net (Bill Marsh)
Subject: [506] PVC tubing for mast
Message-ID: <v01540b00ae04293cccff@[204.183.91.71]>

I would appreciate any ideas anyone can come up with on the following project, I am planning to put up a 40 meter inverted Vee, and would like to use PVC tubing for the mast. I know nothing about this stuff, but the local hardware store has plenty of it in stock from 4 inch diameter down. I would like the total height to be between 25 and 30 feet (with no guys) but already have a 6 foot timber cemented into the ground and can gain a few feet by attaching the tubing toward the top of this.

*Is PVC tubing suitable for this application?

*What size/s shall I use?

*Will a two foot overlap between the timber and tubing be enough?

*Shall I use straps or U-bolts to attach the tubing to the timber or can the tubing be drilled and bolted to the wood.

All advice will be appreciated. Thanks es 72/73. Bill, K3AS

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: ccashion@spdmail.spd.dsccc.com (Charles Cashion)
Subject: [532] request for info
Message-ID: <199607070318.WAA12220@spd.dsccc.com>

Guys,

I have been enticed into converting a Midland SSB (qrp of course) model 13-896 to 10m operation (both SSB and CW). I need a xerox of SAMS PHOTOFACT cb-64. (Not your usual request for assistance). If anybody is willing and able to help, I will either buy the manual from you or pay for the xerox copy of those pages which apply to the 13-896.

OBTW: My vanity application was approved on the 29th of June.
My Original call was WN5ISZ in 1955. It was W5ISZ in 1956 (Tech).
It was W5ISZ (G) in 1967. It is again W5ISZ.
72s, 73s, whatever it takes,
Charles Cashion

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Dennis Marandos <k1lgq@dennis.mv.com>
Subject: [534] Send me your old and NEW call!
Message-ID: <199607070349.XAA05918@bort.mv.net>

This message is for all members who have a call change from the FCC and would like to have it published in the fall issue of the '72' newsletter - The New England QRP Club. It will be hard to remember what your call was, but having it in print will make it easier for others to remember.

Send me your information and I will include it in the October issue (deadline mid-Septmeber) for all to take notice. This listing is open to ALL who can read this notice, be it New England club members or not.

Send your information directly to me, and not through the QRP lister, with the subject titled: NEW FCC CALL SIGN. Send your e-mail to:

K1LGQ@DENNIS.MV.COM

Let's make an issue out of this....!

Dennis Marandos - K1LGQ (_1_ _L_ast _G_ood _Q_uestion)
Editor- The New England QRP Club newsletter

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: talljazz@teleport.com (Dan Presley)
Subject: [505] Straight Keys to the rescue!
Message-ID: <v01530500ae03cdc69c01@[206.163.122.240]>

Just got back from the movie "independence day"-when all comms are 'wiped out' by the bad guys (i'm not giving anything away!) the military uses straight keys (is the pentagon too cheap to buy paddles?!) to spread the word. The closeup looked like a Nye key, but it was pretty quick. There was also a great shot of a bank of operators with keys, and someone at the other end shouting "Morse Code!" Take note all you no code freaks-us 'di-dahers" will save your hide when the big one comes!--When is that next international Warc conference?!!
Dan 'SK' N7CQR

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Clark Savage Turner WA3JPG <turner@safety.ICS.UCI.EDU>
Subject: [533] Want Argosy model 224
Message-ID: <15225.836710157@safety.ics.uci.edu>

audio CW filter for the new member of my family...and Argosy II.
Neat little radio. Always wanted one. Now want the audio filter,
I recall that in combination with the crystal filter it worked very
well. Also would like to find a model 220 8 pole crystal filter
for SSB for the Argosy.

Clark
WA3JPG

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: jgann@mindspring.com (Alvin G. Gann)
Subject: [521] Z-meter cf. Q meter
Message-ID: <199607062005.QAA11326@borg.mindspring.com>

Thanks to Mike for the information on Q meters. I used the Boonton in a lab years ago.

I want to alert any homebrewers to my alternative. Some years ago I saw an ad and purchased the Sencore Z-meter model LC53. This is a digital read-out unit that measures inductance and capacitance at the push of a button. I find it extremely useful in homebrewing.

If you ever see one at a hamfest or flea market, I strongly recommend your getting it. I have no interest in Sencore except as a happy customer. I have no idea if they are still in business or still make a similar unit. I love mine. It is very useful with my extensive junk box to find and match parts. Think of it as the digital ohmeter analogue of the Q-meter.

72 and happy homebrewing. --Jerry W1UI

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: "Steve Silverwood, KB6OJS" <kb6ojs@earthlink.net>
Subject: [504] Re: "Independence Day" the movie
Message-ID: <199607060731.DAA03211@norway.it.earthlink.net>

Not only that, but they were using STRAIGHT KEYS!!! ;-)

> Date: Tue, 2 Jul 1996 21:40:49 -0400
> Reply-to: WJ4PRandy@aol.com
> From: WJ4PRandy@aol.com
> To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
> Subject: "Independence Day" the movie

> Hey gang!!!
>
> Morse Code and "hams" play an important
> part in the movie role in the movie "Independence
> Day"....
>
> ...you heard it hear first - on QRP-L !!!!
>
> dit di di dit dit dit dit
>
> 73, Randy WJ4P
>
>
>

-- //Steve//

Steve Silverwood (Formerly with Computer Associates)
CompuServe: 76703,3035 Internet: kb6ojs@earthlink.net
America Online: KB6OJS Homepage: <http://www.earthlink.net/~kb6ojs>

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: "Barry L. Eure" <ks4rt@cris.com>
Subject: [507] Re: 30 Meters DX list
Message-ID: <31DE9EE1.7C2A@concentric.net>

> PS Sept. 21, 1996 is approaching; do You have Your' site selected for
> the upcoming New England QRP Club's "QRP AField" ? Remember, in Your'
> exchanges, during the "QRP AField" event, add "er" to every noun, that
> ends in "a". "data" becomes "dater", "Antenna" becomes "antenner",
> "Alabama" becomes "Bamer" ;-) We will be following the suggested
> theme for "QRP AField", well almost :-) (Lighthouses).
>
> Where are the rules for the New England "QRP AField"? Do you need to be a
member of the New England QRP Club? What is the purpose of changing "a"
to "er" for words ending in "a"?

TNX es 72
Barry - KS4RT

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Rich Mulvey <mulveyr@11.aa2ys.ampr.org>
Subject: [525] Re: Filling holes
Message-ID: <199607062347.TAA011110@11.aa2ys.ampr.org>

>
> I have several Hammond cast aluminum boxes that I can use in projects,
> however they have holes in them.
>
> Anyone have an easy way to fill these for painting?
>

Well, I solder a piece of aluminum to the inside (for RF purposes)
and put a dab of Bondo on the outside.

- Rich

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: kd7s@psnw.com (Bill Jones)
Subject: [517] Re: Hamcom 3.0 HB interface
Message-ID: <199607061735.KAA18136@psnw.com>

Jess, N0TFI, wrote:

>I just took my first stint at HB in a long time. I built the RTTY interface
>that the Hamcom 3.0 instructions show ugly style on a peice of perf board and
>boy is it ugly!

I also built the interface and use Hamcom 3.0 software. I believe there is
no better way to get your feet wet in RTTY and AMTOR. The software works
very well and the interface is an ideal "first project" for anyone
interested in the digital modes.

Instead of feeding the received audio to the interface from the
headphone/speaker jack, I took it from pin 5 of the ACC(1) socket (AFSK
output) output jack in the back of my Icom IC-728. The audio level is
fixed, regardless of the AF Gain control. I have also noted a significant
improvement in the received signal quality by running everything through my
Radio Shack DSP before going to the interface.

My experience with AMTOR at QRP power levels has been very positive. RTTY
is a little more difficult as there is no forward error correction. On the
other hand, AMTOR seems to have been pushed aside in favor of PACTOR. It
can be difficult to find an AMTOR QSO nowadays. There are still quite a few
people running RTTY, however.

RTTY will never replace CW as my primary mode of operation but it sure has
been a worthwhile addition to my station capabilities.

=====
Bill Jones - KD7S <><
Sanger, California
Reply to kd7s@psnw.com
=====

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: n5zgt@swcp.com (Brian Mileschosky)
Subject: [530] Re: Hy-Gain 19PD Portable Dipole
Message-ID: <199607070300.VAA27034@kitsune.swcp.com>

>The 19PD is an ultra-light dipole antenna that operates anywhere in the
>10-80 meter bands. The elements are fabricated from braided nylon wire
>rope; The conductors are woven into the rope.

That is an interesting antenna! I have a Hy-Gain dipole (Don't know the
model #) that was used in the military. This antenna is like two
tape-measures connected back-to-back in one piece. If you want to operate
at 14.060 MHz, you simply look at a chart on the back of the antenna, and it
tells you what length the legs needs to be. This is the cool part - you
pull out the dipole to the right length. The legs of the dipoles are made

of the same stuff tape-measures are, and even have the inches, etc. on them so you can pull out precisely how much you need to operate at that frequency! (Hope I didn't confuse anybody...)

When you are done, each leg has its own crank so you can reel the legs back in. Very interesting antenna!

72,

Brian, N5ZGT

Boy Scouts of America	Amateur Radio - N5ZGT
JASM -Troop 41	ARRL QRP: NorCal# 1700
Albuquerque, N.M.	Packet: N5ZGT @ KC5IZT.ALBQ.NM.USA.NA
O.A. Lodge 66 <-W-W-W-<<	Internet: n5zgt@swcp.com

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: n5zgt@swcp.com (Brian Mileschosky)

Subject: [531] Re: Hy-Gain 19PD Portable Dipole

Message-ID: <199607070307.VAA27208@kitsune.swcp.com>

Sorry...Forgot to say this antenna is good for any freq from 80 meters to a little past 10 meters. It might be long enough to operate around 160. But it is an awesome antenna that covers the full HF spectrum, as well as MF!

72,

Brian, N5ZGT

> That is an interesting antenna! I have a Hy-Gain dipole (Don't know the
>model #) that was used in the military. This antenna is like two
>tape-measures connected back-to-back in one piece. If you want to operate
>at 14.060 MHz, you simply look at a chart on the back of the antenna, and it
>tells you what length the legs needs to be. This is the cool part - you
>pull out the dipole to the right length. The legs of the dipoles are made
>of the same stuff tape-measures are, and even have the inches, etc. on them
>so you can pull out precisely how much you need to operate at that
>frequency! (Hope I didn't confuse anybody...)

> When you are done, each leg has its own crank so you can reel the legs
>back in. Very interesting antenna!

>72,

>Brian, N5ZGT

>

>

>
>
> -----
> Boy Scouts of America Amateur Radio - N5ZGT
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Boy Scouts of America Amateur Radio - N5ZGT
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Albuquerque, N.M. Packet: N5ZGT @ KC5IZT.ALBQ.NM.USA.NA
O.A. Lodge 66 <-W-W-W-<< Internet: n5zgt@swcp.com

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Gary Surrency <gsurrenc@ix.netcom.com>
Subject: [536] Re: PVC pipe masts and other antenna supports (Long)
Message-ID: <31DF2FEA.6345@ix.netcom.com>

Exposed PVC pipe is very susceptible to heat and UV exposure from the sun. In fact, here in Arizona PVC pipe left out in the sun turns brown and then black from the intense UV.

As an example, the 3/4" AC drain pipe and elbow that comes out from the stucco wall on my house is already black after just a few summer's exposure.

It quickly loses strength when subjected to relatively low heat too.

The 2" PVC plumbing around my swimming pool pump and filter had to be painted with metallic bronze paint to protect it from breaking down in the UV.

I remember when I was living in Florida, I once used a propane torch to warm the end of a 6" length piece 2" PVC pipe so it would get soft enough to slip the end of a 50' TV mast into to use as a vertical antenna base insulator. You have to be careful not

to
overheat it, because it'll give off poisonous fumes. But when it cooled and became
rigid
again, it worked fine. I put on the ground near the house with an eave mount made
of a
PVC tee to insulate and help support the mast, so it was in the shade from the
sun.

With a LC network made of about 10 turns of #10awg wound in a 1-1/2" coil, and a
length
of RG-59/u as a capacitor, I resonated it on 20M as a hi-Z base-fed half-wave
vertical
(I only had about 32' extended) and it also worked on 40M as a quarter wave. I
just
drilled the PVC for an S0-239 and stuck the coil out the opposite side from the
connector and attached the other end to the mast. The braid of the RG-59 went to the
ground system, and the RG-59 center conductor also went to the mast. I tuned it by
calculating the capacitance per foot, and then made minor changes by sliding the
center
conductor out to achieve the best match on 20M. I used RG-59 only for its voltage
rating, as I had a spare length of it. I ran about 100w from a Heath SB101 back
then.

It was very broad banded on both bands, and was easy to match. I put an extensive
ground
system for it, since on 40M it was a lo-Z 1/4 wave vertical and I had already
suffered
some lightning hits. It did well on 20M and pretty well on 40M for DX, but wasn't
much
good for local 40M contacts as compared to my 40M dipole. But it was there
primarily for
20m, so I occasionally would switch to it on 40M to see how it performed with
different
propagation. It was very cheap to build and stayed up despite many Florida
storms. :-)

My best antenna I had in Florida, circa 1984, was made of three sections of 10
foot 1"
aluminum tubing that fit together with beautiful swaged ends, and was mounted on
the
peak of the shingle roof with an aluminum TV mast roof base mount. The coax
feedline
went up through the mast. I guyed the top of it North/South with nylon line, and
an
inverted vee for 75M running East/West provided the other guy. A Savoy Electronics
(probably not in business anymore) balun fit perfectly into the top of the mast
where I

had heated and softened one end of a 1" PVC coupling on so it would slip over the top aluminum section. This put the inverted vee peak at about 51', since the roof was 21' from the ground. With the ends at about 20' in two trees near the edge of the yard, it worked really well and I had many QSOs on 75M, locally and into Europe. I even had some European 75M SSB QRP contacts with it at 1 watt. :-)

Of course, there were no CC&Rs there to prohibit this, just a very gracious mom and dad who let me decorate the entire yard of their country home with many such wire antennas! Occasionally it would come down in a storm and block the circle driveway, but I would repair it quickly. The 30' of aluminum mast would kinda bob up and down and bow when the wind got real strong with only the top guyed. I remember the music the guy wires would play in a moderate breeze, since one nylon guy went to a vent pipe from the bathroom, and when I was on the "john", I could hear it! ;-)

So, I know I wouldn't try to use PVC as a mast here in AZ, since it would loose even more rigidity due to our 110-plus summer temperatures. And if I didn't paint it with a UV protective paint, it will turn brown or black. You should look for some other alternative mast material.

72/73

--

Gary, AB7MY QRP-L #571 Chandler, AZ (near Phoenix)

From owner-qrp-l@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Steve Miller <kg7pv@teleport.com>
Subject: [508] re:PVC tubing for mast
Message-ID: <1.5.4.32.19960706150021.0068f6e4@mail.teleport.com>

>I would appreciate any ideas anyone can come up with on the following
>project, I am planning to put up a 40 meter inverted Vee, and would like

>to use PVC tubing for the mast. I know nothing about this stuff, but the
>local hardware store has plenty of it in stock from 4 inch diameter down.
>I would like the total height to be between 25 and 30 feet (with no guys)
>but already have a 6 foot timber cemented into the ground and can gain a
>few feet by attaching the tubing toward the top of this.

>

>*Is PVC tubing suitable for this application?

>

>*What size/s shall I use?

>

>*Will a two foot overlap between the timber and tubing be enough?

>

>*Shall I use straps or U-bolts to attach the tubing to the timber or can
>the tubing be drilled and bolted to the wood.

>

>All advice will be appreciated. Thanks es 72/73. Bill, K3AS

>

>

Bill, Do you have a military surplus store in your town? I found the neatest
stuff for masts the other day. It is 4' fiberglass pole sections swagged to
connect. It is designed for supporting camo netting over stuff you don't
want the bad guys to see, but a local ham has used it for years of portable
operations. I bought 32 feet and will be making a guy ring out of plastic
sheet acrylic. This stuff is much stiffer than pvc but needs (I am told)
to be raised vertically one section at a time rather than tilted up so you
don't break the joints which were designed for a pole maybe 3 sections high.
The store also had aluminum sections for more \$ but too heavy for my camping
uses (32 feet of the fiberglass stuff weighs 16 pounds). I have used pvc
for short masts but find it too flexible for tall stuff unless you use big
stuff at the base and progress to smaller stuff as you go up. You may need
to guy it as my pvc masts bowed in the middle with the pull of the inverted
vee (I like em straight :-)

73

Steve Miller (CN-85) Norcal #308 QRP-L #109 (packet
kg7pv@k7iqi.or.usa.noam)

Oak Hills Spirit II, ant is 40 mtr dipole fed w/ladder line @ 45 feet

-

KG7PV TMPS 1996 Qs=19 States=11 Confirmed=0 Dx=02

AK CA CO KS NC NE NM PA TX JW OZ WV UT

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: Jim Stafford W4Q0 <w4qo@america.net>

Subject: [513] Re: PVC tubing for mast

Message-ID: <31DE86D4.7610@America.Net>

Just a short comment.... I have about 20 feet of it up as a GUYED mast

right now and am NOT happy with it. It is temporary of course, but very flimsy. I think mine is about 2.5 inches in diameter at the bottom and the next section is about 2 inches. I have a telescoping "pool broom" handle at about 15 feet coming out the top of that. BTW the aluminium pool handle (also used for paint roller extension to high places) is real nice but they are expensive - maybe \$25 for 15 foot mast. Anyway, with the pool broom handle in the top of the 20 foot pvc and guyed in two places (top and middle) the thing looks like a big S --- I have tried to figure out how to get it more straight without more guys but can't.

Anyway. I think for about 20 feet and two guys lines, it could be made straight, but mine is guyed at about the 15 foot level on the PVC and at the top of the pool broom handle right below the antenna (a 440 vertical weighing no more than a pound) and as I say it is not straight. Now the NE QRP club has a project that makes 20 foot telescoping mast out of PVC and I think it has two sets of guys for only 20 feet and that will probably work fine, in fact I hope to get one of their kits.

I suspect that you will find it not very satisfactory unguyed at 30 or 40 feet, but here's the thing - it's cheap so go ahead and try it.

Let me know what you think.

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: brozenske@juno.com (Barrie L Brozenske)
Subject: [514] Re: PVC tubing for mast
Message-ID: <19960706.125403.10694.1.Brozenske@juno.com>

HI Gang
Guess I'll dip my oar in here too.

I remember on Field Day several years ago when we tried to put an antenna up on a couple sections of 1.5 inch PVC mast. It was like trying to put up a piece of cooked spaghetti! Took multiple guys every 5 feet, with people on each one keeping the tension equalized to get it to go up. Looked like a piece of spaghetti after it was up too. Couldn't get it straight nohow. Not a very suitable material in my opinion.

Please let me know if you find a good way to deal with it.

73,
Barrie, K3BUZ

On Sat, 06 Jul 1996 11:31:32 -0400 Jim Stafford W4QO <w4qo@america.net>
writes:

>Just a short comment.... I have about 20 feet of it up as a GUYED mast
>
>right now and am NOT happy with it. It is temporary of course, but
>very
>flimsy. I think mine is about 2.5 inches in diameter at the bottom
>and

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Joe Everhart <n2cx@voicenet.com>
Subject: [515] Re: PVC tubing for mast
Message-ID: <199607061733.NAA11635@mail.voicenet.com>

Bill,

I've written a couple of articles on PVC masts for QRP newsletters. One, in the latest QRPP (Property Line antenna is a 19 footer for permanent use. It uses a 10 foot section of 2" schedule 40 pipe for the lower section and a 10 foot piece of 1-1/2" schedule 40 pipe for the top. The top section overlaps about a foot inside the lower and is held in place with two 1/4 bolts through both. A screwbolt goes through the very top for hoisting up an inverted vee and attaching guy lines. With the inverted vee steadying the mast in one plane, and two guy lines at right angle to it, the mast has held up to NJ weather quite well for about 1-1/2 years now. BTW, use good quality nylon guy lines for longevity.

In the April issue of 72 (NEQRP newsletter) I had an article on the "NEQRP QRP Afield Twenty-30 Portable PVC Mast." This is a twenty foot version of a mast with four five foot sections of 1-1/4 inch pipe. Each section is joined to the next with a one foot piece of 1" pvc pipe inside. A 1/4 inch eyebolt through the pipes above and below each joint joins them together. The mast is guyed at the 15 foot mark with three light nylon lines. An inverted vee needs no further guying, although an end-supported wire would need an opposing guy line or two at the top.

I have since added a five foot piece of 1-1/2 pipe with a one foot 1" internal coupler to my "Property Line" design. In a month or so of thunderstorms and gusty winds, it has performed well. It could go higher but for aesthetic reasons. :-).

The kit is currently being offered to NEQRP members, but will be generally available on Aug 1. I will send you information separately on the mast kit

and a lightweight antenna kit available from me. There is a booklet as part of the mast kit that has more ideas on higher, more durable masts.

Good luck and...

72/73,

Joe E., N2CX

work: jeverhart@cayman.vf.mmc.com

home: n2cx@voicenet.com

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996

From: "L. B. Cebik" <cebik@utkux.utcc.utk.edu>

Subject: [526] Re: PVC tubing for mast

Message-ID: <Pine.SOL.3.91.960706202333.2706A-100000@utkux4.utcc.utk.edu>

I, too, have tried PVC for a mast and was unhappy with the s-curves, as well as the weight. If you use Schedule 40 at 20' or more, you will simply have a heravy mast with s-curves. If you go to 315 or similar, you will learn how many curves an S can have.

I finally went down to RS and bought 3 10' sections of their green TV mast. Since I was supporting one end of a long wire (an EDZ, to be more precise), I used the wire as one "guy" and used two lengths of the sun-protected black multi-layer synthetic rope (forget its name and exact composition) as guys at 120-degree angles from the wire. The guy ring was actually a couple of feet below the wire end, but the steel mast is rigid enough to forgive this. Since my guys had to go all the way to the ground, I set two dog-chain screws into some sack-crete in ground holes and tied the rope to the top loops. I set these about 4" below lawn level so that when I eventually removed the assembly, I simply beat the rings flat with asledge, added a little soil and grass seed, and cannot find the old rings today (unless I get out the metal detector).

To set the mast, I put a short stub of 1 1/2" dia Sced. 40 PVC in a little puddle of concrete. I cut away the side toward where the pole would lie on the ground ready to be raised. The higher part of the PVC acted as a stop so that the mast slid smoothly into the short hole (4-6" deep) as I raised the mast as a 1-person task.

One set of guys for 30' of mast was more stable than 2 set on 20' of PVC for me, and for field use, I use 4 sections of 5' TV mast of the same green grade at RS. Now even the best steel TV mast will rust with time and abrasion, so it requies annual maintenance. Before a field trip or

test use, I use WD-40 or equivalent on the joints. I do not use the mast junctions as a ground path, but have used braid jumpers across junctions or separate braid all the way to ground. For field use, I have used both long aluminum tent pegs and 12' lawn timber spikes as short term guy rope anchors.

The thicker grades of TV mast are more rigid and yet lighter than the stiffest PVC. I have regularly used PVC in many grades as 10 meter 2-element beam booms and supports in lengths up to 5'. I have a stressed 3/4-size 2-element 10-M quad that uses thin and thick walled PVC, along with Tees and other connectors glued. I have even used the lighter PVC as a frame for a ZL Special, but it was carefully stressed to hold its shape. A Moxon also used stressed (with synthetic cord/rope) PVC. However, notice that stressing is almost a necessity to have PVC hold a configuration.

Mast should hold their shape on their own and use guy rops to prevent collapse. That is why I prefer TV masting to PVC for both home and field work. For wooden structures, the antenna books show some interesting A-frame designs that are adaptable to 4 "leg" designs for even greater stability (but with guys).

PVC is great for lots of stuff, including antenna parts, booms, bird house supports, and even climbing rose trellises (which is what the ZL Special frame became when that experiment ended). But for me, steel masting makes the best mast up to about 30' or so.

Just thought I would put an alternative view into the creative mast pool.

-73-

LB, W4RNL

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Mike Czuhajewski <wa8mcq@u1.abs.net>
Subject: [501] Re Q meters (very, very long)
Message-ID: <Pine.BSI.3.93.960706005436.956A-100000@u1.abs.net>

>From a posting on 27 Jun 1996, from John Young, WA8KNE--"I picked up an old Heath Q-meter at a ham fest for \$3.... Having never used a Q-meter I played with it for a few hours and traced the basic circuit but still have no idea how to use it. A copy of the manual or other information or references on Q-meters would be appreciated...."

I've had a Boonton model 260A Q meter since 1990, and found it to be

an extremely useful instrument. I saw the Heath Q meter once, and though it's a Cadillac/Chevrolet comparison in many respects, with the Boonton being the Cadillac, the basic principles are the same.

One of the most useful things a Q meter will do is measure inductance and capacitance. The basic instrument consists of a variable oscillator and a variable capacitor, both with calibrated dials, and some sort of resonance indicator. Remember the old trick of using a dip meter and capacitor to measure inductance? A Q meter does basically the same thing but with much greater precision and ease. You set the dial for some frequency, connect your inductor, and tune the capacitor until resonance is indicated. (On the Boonton, it's a meter.)

You can read the capacitance off the dial and use that plus the frequency to calculate the inductance. If you set the frequency to certain specified points, you can read the inductance directly off a separate scale on the variable capacitor dial (at least on the 260A--I don't know about the Heath). If you don't get resonance at any settings of the capacitor dial, you need either more or less capacitance than it has; change the frequency and try again.

To measure capacitance, within limits, you take some arbitrary coil and set the variable cap for maximum capacitance, then vary the frequency for resonance. You then connect your unknown capacitor in parallel with the variable cap, which knocks it out of resonance, and reduce the capacitance until you see resonance again; the amount of capacitance removed, which you read off the dial, is the amount the unknown cap added. This only permits relatively small caps to be measured, limited by the size of the variable cap in the Q meter.

In the case of the Boonton 260A, the cap is 30 to 460 pF, so the largest you could measure directly is 460 minus 30, or 430 pF. But you can extend that by measuring a cap in that range, then connecting that known cap in parallel with the internal cap, vary the frequency until you have resonance again, then add your unknown cap and repeat. That way, by removing both the known cap along with a certain amount of capacitance on the variable cap, you can measure capacitors larger than 430 pF.

There was a qrp-l posting a couple of weeks back from w0rww@kktv.com advertising a Boonton 260A for \$75, I think. (Why would anyone part with such a useful thing? He also has the solid state version they came out with later!) I don't know if he sold it or not, but I certainly hope so--it's an incredibly useful tool for a homebrewer. And if anyone reading this did buy his Boonton and wants more info on it, I can copy some of what I have--that includes the manual as well as several related articles from the old Boonton Radio Notebook

series (the latter passed to me by St. Louis QRPer Andy Becker, W0NVN).

Finally, here's something from my Idea Exchange column in the QRP Quarterly that I wrote about the Boonton back in 1991. Warning--this is several pages long.

73 and Queue Our Pea DE WA8MCQ

wa8mcq@abs.net

THE Q-METER, THE HOMEBREWERS FRIEND

[from the October 1991 QRP Quarterly, Idea Exchange column]

Please forgive the hokey title, but anyone who really knows and understands these devices knows how useful they can be. There are many fine, modern digital Q meters available but you'd have to postpone purchase of your next car to get one, and you don't really need such accuracy and bells and whistles at home anyhow. On the other hand, there's nothing wrong with an older, analog unit, such as the Boonton 160A and 260A.

I acquired a 260A last year, and found it to be extremely useful and versatile (although also extremely large and heavy). What can you do with one? Measure inductance of coils at the frequency they will be used at, measure their Q (quality factor), and measure capacitance. (Actually, it measures the apparent inductance, which is the true inductance as modified by the distributed capacitance of the coil, another characteristic you can measure.) It also functions as a calibrated 30-460 pf variable capacitor, with resolution to much better than 0.1 pf on the +/- 3 pf fine tuning cap, and includes a wide range variable frequency oscillator, covering 50 KHz to 50 MHz.

The basic idea is to apply some RF to a coil, resonate it with a variable capacitor and observe the voltage rise at resonance. From this you can determine Q by reading the meter, and find inductance, either directly from scales on the unit (260A only) or by plugging values into a formula. You can also measure capacitance. Connect a coil, set the capacitor near maximum, vary the frequency until you have resonance. Now connect the unknown capacitor, which throws the circuit out of tune. Reduce the Q meter capacitance until you have resonance again. The amount that you reduced it is equal to the unknown capacitor.

* insert picture; caption: *
* "Boonton 260A Q meter" *

The picture will help you identify the 260A at hamfests. Boonton also made the model 160A, which is older but similar; among other things, the meters are round and different sizes, and the dials are on the outside of the cabinet instead of peaking out through windows. I saw another Boonton Q meter at a hamfest once with a number between these two, but it's a VHF version. (Details are sketchy, but I believe there might be two VHF versions, models 170A and 190A.)

Both devices use vacuum tubes, and it would be a good idea to pick up a few spares if you can find them at hamfests. This particularly applies to the detector tube, which is the same in both units; it's one of those old 6 pin tubes with grid cap on top. The 260A otherwise uses relatively new tubes, with 7 and 9 pin miniature bases. The December 1989 issue of Ham Radio magazine had a good article by W3QOM on Q meters, including replacement of the ancient tubes in the 160A with some which are merely old. Replacement of the detector tube is also applicable to the 260A. (The article also contains a picture of the 160A.)

160A tubes:
5Y3 rectifier
45 oscillator
Boonton 535A detector (2A6)

260A tubes:
6X4 rectifier
0A2 regulator
0B2 regulator
5763 oscillator
Boonton 535A detector (2A6)

Actually, there were three Boonton Q meters in the HF region, though I only recently heard of the model 100A. It was introduced in 1935, the 160A in 1939, and the 260A in 1953. I know nothing about the 100A, nor the VHF model(s), which appeared to be of similar vintage to the 260A. Either the 160A or 260A should be suitable, though I'd recommend the latter. Price? According to a 1963 Boonton brochure, the 260A cost \$990.00. My folks bought a new Chevrolet that year for only twice that amount. The 260A was considered a laboratory grade instrument at one time; although technology has come quite a way since then, it's still a good unit to have. I've seen some

advertised by dealers for \$150 to \$200, which is probably top dollar, but you should be able to pick one up for considerably less, depending on condition and your negotiating powers. W3QOM mentioned a figure of under \$50. When doing your bargaining, don't forget to point out that even the newer 260A is an antiquated device for which parts are hard to find--tubes, high voltage transformers, high voltage electrolytic caps, etc. They don't need to know that it's such a useful device that you'd sell your grandmother to get one.

An important consideration is the thermocouple; ask the seller if he knows whether it's good. When measuring Q, you set the level of the oscillator to a precise value on the lower meter, which is driven by the thermocouple--RF energy flowing through it results in a proportional DC output. It can be burned out by excess drive, and if it is the unit isn't worth as much and the price should drop accordingly. (It's still quite usable though, so don't pass it up--details later). I was told that there is still a company which will replace the thermocouple and calibrate the 260A to the new one for about \$200. (They won't sell the thermocouple by itself.) One of the improvements of the 260A is that it's harder to burn out, and the oscillator level is deliberately limited to well below the burnout point, as long as you keep the needle on the scale.

The lower meter is "MULTIPLY Q BY". The top meter, which is essentially a vacuum tube voltmeter connected to measure voltage rise at resonance, is calibrated in Q from 0 to 250. (Q is a unitless measurement.) If the oscillator is set to the X1 mark on the lower meter (which is near full scale), the top meter scale is read directly. If you are measuring something with a Q higher than 250, you crank down the oscillator level to X1.5, X2 or X2.5. This gives an effective full scale Q reading of 375, 500 or 625.

If the thermocouple is burned out or otherwise defective, the unit is not useless (but don't tell this to the seller!). You cannot accurately set the multiplication factor, so you can't use the Q scale directly. However, you can still measure the Q by another method, detailed in the W3MT article in the May 1984 issue of QST. Tune the variable capacitor for resonance at the frequency of choice, and note the meter reading on the Q scale, whatever it is. (For maximum accuracy, adjust the oscillator level to give a reading as high as possible on the Q scale.) Next, increase the capacitance until the reading drops to 70.7% of that value and record the picofarads. Decrease the capacitance back through the peak and continue until it once again shows 70.7% of the peak value, and note the new capacitance. See Figure 1. Divide the sum of these two by the difference between them to get the Q; eg, for values of 120 and 130 pf, the Q would be $(130 + 120)/(130-120)$ or 25.

* insert Figure 1 *

If simply measuring inductance or capacitance, the oscillator level is not critical--just look for a peak reading on the Q scale, which indicates resonance; the actual value is unimportant. Use any level that gives a usable reading on the Q meter; the thermocouple is only needed when reading Q directly from the scale, to give proper calibration. With the thermocouple burned out the price of the unit should drop considerably, and yet, as you can see, it remains quite usable! (Realistically, most homebrewers probably have little more than academic interest in measuring Q anyhow; inductance and capacitance are usually of greater importance to the typical builder.)

Not only is the 260A newer and better looking than the 160A, it's easier to measure inductance. On the 160A you set the frequency and tune the variable capacitor for resonance. To find the inductance, read the capacitance on the dial, and plug that and the frequency into the standard inductance formula. Things are simpler on the 260A--not only is the capacitor dial calibrated in picofarads (though marked "micromicrofarads") it also has an inductance scale, from 0.95 to 13, so no calculations are required as long as one of the standard test frequencies is used. The scale multiplier is read from a chart on the front panel, according to frequency. For instance, if the oscillator is set to 7.9 MHz, the inductance scale on the capacitor dial indicates 1 to 10 uH (plus some overlap, 0.95 to 13 uH).

Note that while the inductance scale is only accurate when certain specified frequencies are used, you can still measure inductance at any frequency by plugging the values into the formula. (Q, of course, is measured at whatever frequency you want.) The test frequencies and inductance ranges of the 260A are:

25 MHz: 0.1-1.0 uH
7.9 MHz: 1-10 uH
2.5 MHz: 10-100 uH
790 KHz: 0.1-1.0 mH
250 KHz: 1-10 mH
79 KHz: 10-100 mH

On the 260A, the oscillator output is connected to the thermocouple assembly with a BNC connector, which is accessible through a hole in the rear of the case. I added a BNC tee to this connection so I can hook up my frequency counter when needed for maximum accuracy. There is a detectable effect on readings when the cable is connected,

probably due mainly to the capacitance of the four feet of RG-58, but it is slight.

The Boonton Q meters, as with anything using the "voltage rise at resonance" method, aren't perfect as I found out the hard way. Some coils simply refuse to give a reading. For example, I wound a few turns on a T50-26 core and calculated that it should have about 4 uH inductance. I checked it at an appropriate frequency for 4 uH, 7.9 MHz, and never got a flicker on the meter. I tried the ranges on either side, using 2.5 and 25 MHz, and still nothing. I put the coil on a \$150 handheld LCR meter and a \$5000 Hewlett Packard digital LCZ meter, and got readings of about 4 uH on both of them.

The problem? The frequency was appropriate to resonate 4 uH with the 30-460 pF capacitor in the 260A. Unfortunately, it turns out that type 26 powdered iron material is designed for power line frequencies, and is a low Q material to boot. By the time you get up into the MHz region the Q of the material is microscopic, as is the voltage rise at resonance. Technically, it was a good coil since the winding had continuity and there was a certain inductance, but the frequency was inappropriate for the core material. I could have switched the meter down to a lower, more appropriate frequency for the core material, but then the inductance of this particular coil could not be resonated with the 30 to 460 pF capacitor in the 260A.

I also had the same problem with some coils wound on type 43 ferrite cores. As with the type 26 core, the two other devices did give readings since they test at 1 KHz. (This touches on the issue of testing coils at the standard 1 KHz test frequency versus the frequency at which they will be used, which is a can of worms I prefer to leave unopened for now since this column is already getting too long.) Aside from "problems" like this, the voltage rise at resonance method used in the Boonton meters is basically a good, sound and classic one.

Where to get technical information on this outdated but extraordinarily useful device? I've solved that one for you. I put a cry for help in QST and received about 20 replies, including offers of help as well as several copies of the manual for the 260A. (Unfortunately, all but one of those were abandoned when I was evacuated from the Philippines.) In addition, I received several articles from the Boonton Notebook series of the 50's, as well as the test and alignment manual for the 160A/260A. (The latter includes schematics of both units.) If anyone needs photocopies, I can provide them at cost.

It's great fun playing around with various coils and experimenting, but how about a practical application? I built some low pass filters

with toroids for 20 and 40 meters once and ran frequency response tests--they didn't work as expected, giving high insertion loss at the design frequencies. I wound the coils according to the recipes, with the number of turns called for, but the inductances were off. After I got the 260A I adjusted them to get the correct inductance. New frequency response tests showed they now work as expected.

I later built a low pass filter into a 10 meter QRP rig, using the meter to adjust the inductances before installing them. Once again, wound according to the recipe, the inductances were off. When I tested the rig on a spectrum analyzer I found the filter worked properly off the bat.

Some related articles for further reading on measuring inductance and capacitance:

1. A Crystal Controlled Q Meter, W3MT, QST, May 1984. Measures Q at 3 crystal controlled frequencies; also measures inductance and capacitance.
2. A Simple L-C Meter, W3MT, QST, February 1983. Measures L and C at 2 crystal controlled frequencies.
3. Capacitance and Inductance Measuring Devices, KB4ZGC, QST, February 1980 (Hints & Kinks). Separate crystal controlled devices to measure each parameter.
4. A Tester for Coil Inductance, W1FB, QST, April 1986. Dual range, crystal controlled tester.
5. Measuring Inductance and Capacitance with a Reflection Coefficient Bridge, W6ZGN, QST, May 1982. Adapter used with previous device by same author ("A Reflection Coefficient Bridge--Impedance Matching Measurement the Easy Way", QST, October 1981). Used in conjunction with signal generator at chosen frequency.
6. A Simple Inductance Meter by KH6CP/1, based on a W1FB design, ARRL Handbook for 1989, 1990 and 1991, Test Equipment and Measurements chapter. Measures inductance using 4 fixed frequency LC-tuned oscillators.

I've found the 260A to be an extremely useful and fascinating device, and it quickly became the favorite toy in my workshop. Anyone who is seriously interested in the more technical side of homebrewing should strongly consider picking one up if they have the chance--it's well worth it.

Q METER UPDATE

[from the April 1992 Idea Exchange]

I wrote about Q meters in a previous issue; here are a few additional notes. First, Boonton was not the only one to make such devices. Marconi and General Radio also made them, and there are probably others. Most of the basic principles remain the same, though.

As for price, at a local hamfest I saw a model 160A in the "everything in this pile--\$20" section. I also saw a 260A in good condition for \$60. It was missing the 535A detector tube, rendering it inoperative, but the owner refused to negotiate so I passed it up. (I've been kicking myself ever since. Even if a tube couldn't be found, I could whip up a suitable solid state replacement.) I later saw a 160A for \$15 at an estate sale.

I had mentioned that the 160A did not have an inductance scale on the capacitor dial. I read that in a Ham Radio article and saw one which did not have it, but after writing that column I came across one which did. I later found a note in one of the Boonton Notebook issues saying that 160A models after a certain serial number had radical design changes.

According to the 260A manual, only genuine Boonton model 535A tubes should be used. They used the type 2A6 in the ancient model 100A Q meter, but went to the 535A starting with the 160A. The schematic of the 160A says "(105A)" near the tube. I checked the tube tables in ARRL handbooks going back to the mid 1950's and couldn't find that or 535A. Some old Boonton information says that they used specially selected 2A6s in the 100A, which excelled in certain characteristics making them useful in that application.

I opened up my 260A, pulled out the tube, and "535A" was printed on the base, along with the Boonton name and logo. The base also had "(105A)", along with a date code indicating that it was made in 1965. This tube is one of those "old" types with 6 pins, of which two are fatter than the others, and a grid cap on top. While most of that style have been out of production for years and years, Hewlett Packard (which eventually bought out Boonton) was still selling the 260A Q meter in the 60's, and naturally repair parts had to be available as well. The envelope of the tube had type number 1659, but that wasn't listed in the handbooks, either. (Perhaps they culled large batches of 1659's and labeled the best ones as 535A.)

I don't know how closely the 2A6 resembles the 535A, and how well it would do in its place. However, when my 535A finally gives up the ghost I'll get a 2A6 and see how it works. While the 535A would probably give superior performance, homebrewers don't need laboratory quality and some compromise is acceptable for home use. The 2A6 is available for \$4.50 (plus shipping), with guarantee, from Antique Electronic Supply. You can easily pay that much or more at a

hamfest, and HOPE the tube works. They also have the 5763 oscillator tube (which I've had a hard time finding at hamfests), as well as the rectifier and regulators. (If either of those two fail, it might be cheaper and simpler to replace them with 1N4007s and zener diodes.) Their new address is 6221 S. Maple Avenue, Tempe, AZ 85283. They also have a few parts of interest to homebrewers and antique radio buffs, and their catalog is worth asking for, if you don't mind sending the \$2 they ask for.

--qrp--

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: john andrews <jm165723@eee.org>
Subject: [502] Re: Re Q meters (very, very short)
Message-ID: <31DDFEE3.3924@eee.org>

Mike Czuhajewski wrote:

SNIP...

Hi Mike:

Yep. Been there...

Picked up a similar device a few years back ESI Model 250-DA that has similar specs.

R- 0-12 MegOhm (Resolution .1 Ohm)
L- 0-1200 Henries (" .1uH)
C- 0-1200 MicroF. (" .1pF)

A bit more modern with a tube complement of:

12AX7
6U5
12AT7

This one stayed in service with the Navy until at least the late 80's(I read the Calibration stickers:-).

Hate to part with it, but the doc says anything over 5 lbs. is a No-No and can't get my wife to lug it around!

Best Offer (with manual) plus shipping.

72, John- N5INZ

From owner-qrp-1@Lehigh.EDU Sat Jul 6 23:19:07 1996
From: Rich Mulvey <mulveyr@ll.aa2ys.ampr.org>
Subject: [509] Re: Straight Keys to the rescue!
Message-ID: <199607061508.LAA00390@ll.aa2ys.ampr.org>

>
> Just got back from the movie "independence day"-when all comms are 'wiped
> out' by the bad guys (i'm not giving anything away!) the military uses
> straight keys (is the pentagon too cheap to buy paddles?!) to spread the
> word.The closeup looked like a Nye key, but it was pretty quick. There was
> also a great shot of a bank of operators with keys, and someone at the
> other end shouting "Morse Code!" Take note all you no code freaks-us
> 'di-dahers" will save your hide when the big one comes!--When is that next
> international Warc conference?!!
> Dan 'SK' N7CQR
>

Uh oh - we're REALLY in trouble when people start using bad SF movies as reasons
to keep the code, even in jest. :-)

- Rich